

**Title:** Groundwater Quality and Laundromat Wastewater: Summit Lake, Wisconsin (Study No. 29)

**Investigators:** Principal Investigator

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**Objectives:** To determine groundwater quality near a laundromat disposal pond.

**Background/Need:** Rural laundromats in northern Wisconsin rely to a great extent on on-site land disposal of their laundry wastewater. The potential for groundwater contamination from untreated laundry wastewater is largely unknown. This study was undertaken to determine the need for treatment to mitigate the impacts on groundwater resources.

**Methods:** Eight water table monitoring wells were constructed in the vicinity of the laundromat. Groundwater samples were taken and analyzed for compounds generally associated with laundry detergents, namely phosphorous, sodium, sulfates and chlorides. Indicator parameters of conductivity, total dissolved solids (TDS), biological oxygen demand (BOD<sub>5</sub>), chemical oxygen demand (COD), alkalinity, hardness, boron and pH were also analyzed.

**Results:** Summit Lake laundromat discharges to a lowland creating a wetland system in which natural processes have been effective in assimilating the biodegradable fraction of laundry wastewater. Surfactants, other organics and nutrients are quickly degraded or assimilated under aerobic conditions throughout the pond while less available and more mobile inorganics remain untreated. Soils exhibit a high degree of microbial activity which accounts for the ability to break down organic compounds. Significant water quality changes were not seen in private or monitoring wells. Local groundwater may be protected by a clay lens which impedes downward migration of readily transportable solutes.

**Conclusions:** Investigators conclude that groundwater quality impacts from laundromat wastewater are minimal based on horizontal groundwater movement. The combined effects of biodegradation and adsorption appear to adequately treat detergent residues. Inorganic substances may potentially migrate off-site due to slower degradation.

**Recommendations/Implications:** Investigators suggest biological methods of wastewater treatment for laundry wastewater to mitigate possible future groundwater impacts. Future study of possible methods recommended include constructed wetlands in areas with suitable soils, ridge and furrow systems and intermittent sand filters.

**Availability of Report:** This report is available for viewing and loan at:

The Water Resources Center  
1975 Willow Drive  
Madison, WI 53706  
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**Related Publications:** Saltes, Jack G., 1988. Biodegradation of Surfactants in Saturated Subsurface Sediments: A Field Study. *Groundwater*, V. 26, no. 6, pp. 761-770.

**Key Words:** Wastewater, wetland.

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